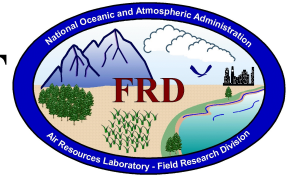


FRD ACTIVITIES REPORT

August 2006



Research Programs

Smart Balloon

The FRD smart balloon team of Randy Johnson and Shane Beard deployed to Houston this month to participate in the Texas Air Quality Study II (TEXAQSI). Balloon flights have already begun and are scheduled to continue through mid-September. The balloons carry a bevy of meteorological instrumentation and an ozone sensor. The first smart balloon was launched on 30th August and moved south and east across the entire Gulf of Mexico (Fig. 1). The balloon flight was terminated after 4 days in the air as it moved across Florida in hopes of retrieving the balloon. Five more balloons are expected to be launched before the end of the experiment. Real-time smart balloon data and tracking maps are available on the internet at <http://tw.s.unh.edu/TWS-DEV/TWS/realtimemapping.htm> (Randy Johnson, 208-526-2129, and Shane Beard)

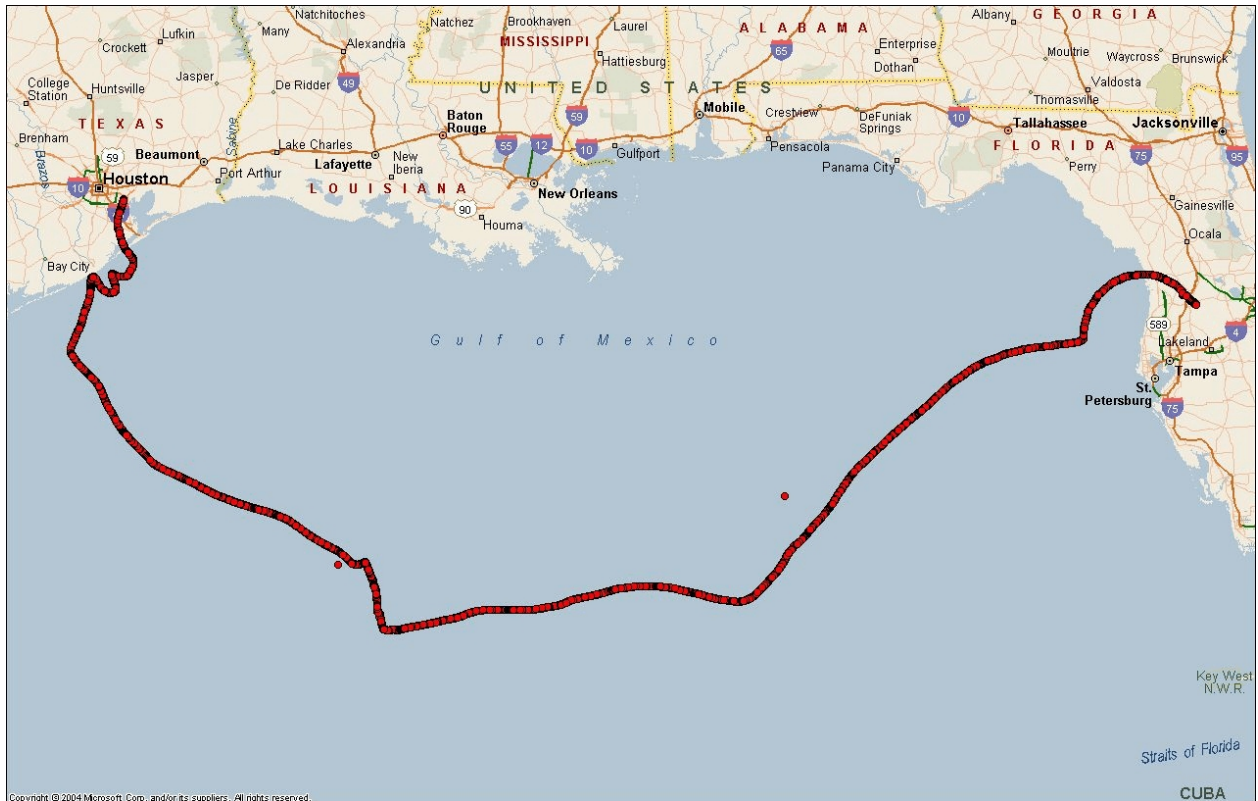


Figure 1. Path of the smart balloon launched August 30th from Houston, TX during the Texas Air Quality Study II (TEXAQSI).

UrbaNet/Urban Dispersion Program

Preliminary analysis of the 2005 Midtown Manhattan atmospheric tracer data set was begun. Peak-to-mean concentration ratios were similar to those found in the 2003 Oklahoma City data set, and commonly ranged from 5-10, and upwards to as high as 25. Plume width calculations indicate that near the source the plumes spread rapidly and then at a much slower rate downwind, probably due to the effects of blocking and channeling of the flow (Fig. 2). It was found that plumes could arrive at receptor sites up to three times more distant than receptor sites close to the release site at essentially the same time (Fig. 3). The average ratio of plume arrival speed to wind speed aloft, a proxy for the degree of flow decoupling, was similar to the average daytime ratio for Oklahoma City. Midtown Manhattan tracer decay times were significantly longer than day or nighttime decay times for Oklahoma City. Results from this study will be incorporated into a journal article within the next few months. (Dennis Finn, 208-526-0566)

A new series of footprint concentration maps with the local NWS ASOS and building rooftop winds were generated for the Midtown Manhattan summary report that will be published as a NOAA Technical Memorandum. The addition of the local winds in the footprint maps will help better explain the nature and movement of the tracer plume in a complex urban environment such as New York City. (Dennis Finn, 208-526-0566, and Jason Rich)

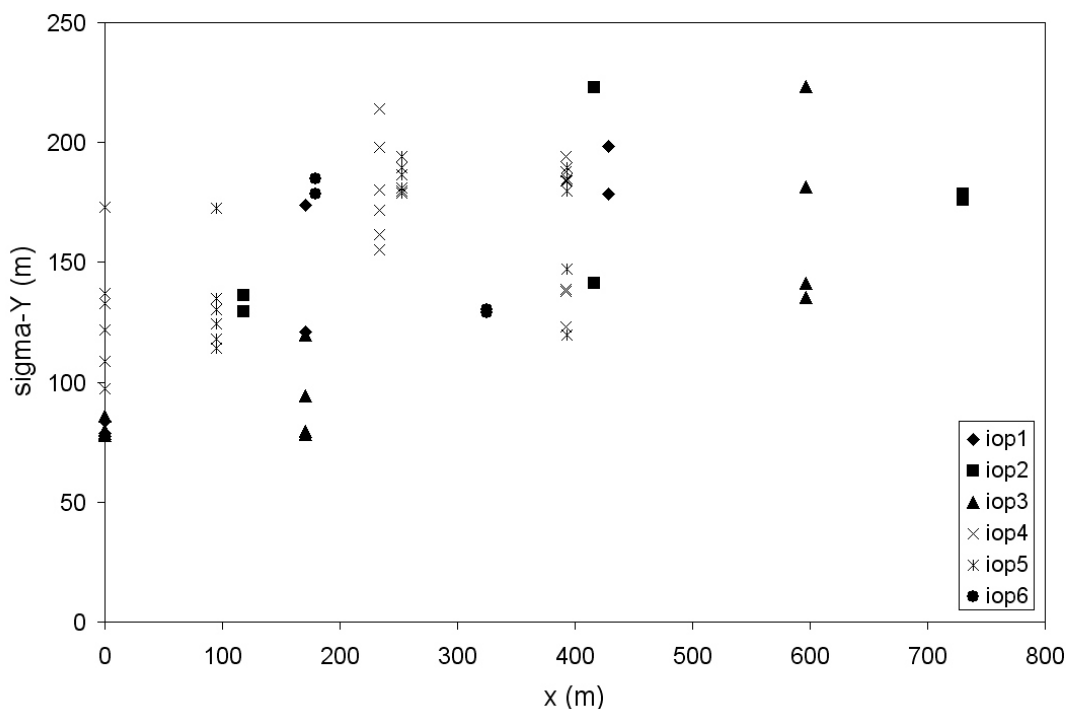


Figure 2. Plume width calculations from the 2005 Midtown Manhattan Urban Dispersion Program field experiment.

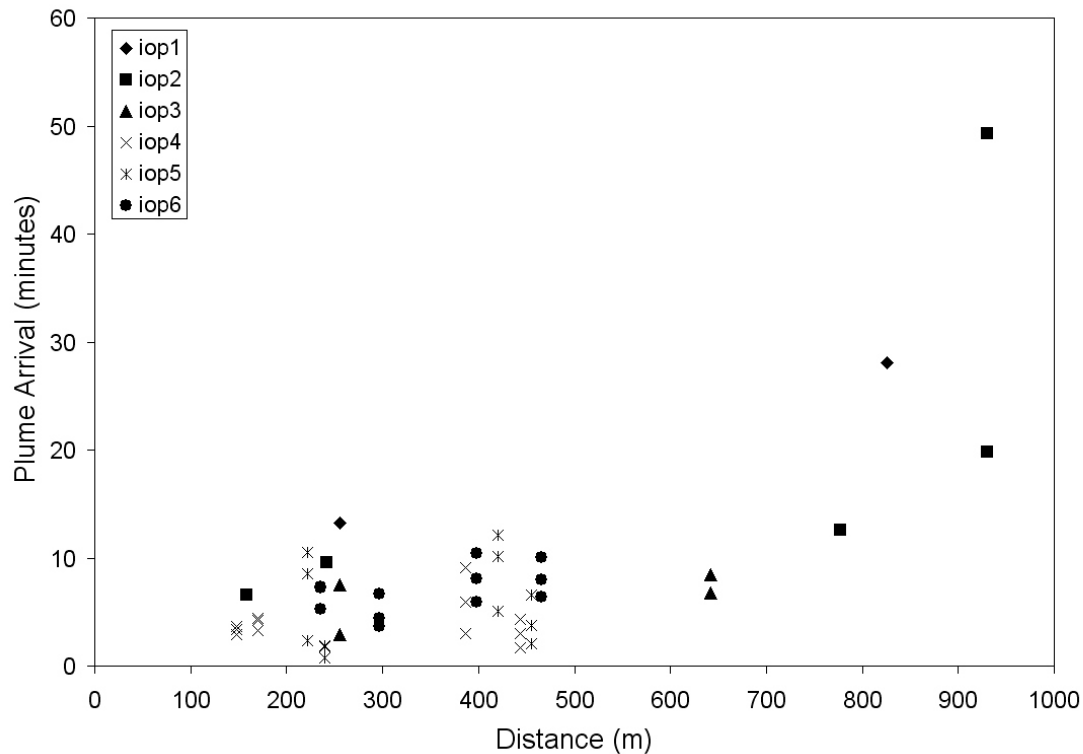


Figure 3. Plume arrival times and downwind distance from the release site during the Midtown Manhattan Urban Dispersion Program field experiment.

UrbaNet/ARL

A fugitive SF₆ survey will be conducted in the Las Vegas area next month to locate any existing sources of SF₆ that could complicate a large-scale controlled SF₆ atmospheric transport and dispersion tracer experiment. Preparations for that study are in process. The continuous SF₆ analyzers began the required pre-project conditioning in mid-August and are now running very well. (Roger Carter, 208-526-2745)

FRD and ATDD have been discussing various methods that may be useful for improving wind and turbulence forecasts in urban areas. One approach that holds promise is to develop a statistical regression similar to the Model Output Statistics (MOS) that are already commonly used for NOAA operational forecasting. The urbanized MOS would be based on a regression containing both model output and more recent field observations, including observations from the private networks that are the core of UrbaNet. This approach has the advantages that it is relatively simple and it should be possible to objectively determine whether the inclusion of private network data in the regression improves the urban forecasts. Also, the operational parts of NOAA already have some familiarity with the MOS approach. (Richard Eckman, 208-526-2740, and Ronald Dobosy, ATDD)

ET Probe

For the ET probe manuscript submitted to the *Journal of Atmospheric and Oceanic Technology*, a revised manuscript has now been sent back to the editor along with responses to the reviewer comments. The revised manuscript is much improved over the original. (Richard Eckman, 208-526-2740)

There continues to be interest in the ET probes for NOAA programs related to hazard resilient communities and wind hazard reduction. Material related to the probes has been presented at the planning meetings for these programs, and the response has been positive. These programs were created fairly recently in response to the active hurricane seasons, so they are still in the planning stages. (Richard Eckman, 208-526-2740)

Joint Urban 2003

A manuscript summarizing the JU03 analysis is presently undergoing internal review. (Dennis Finn, 208-526-0566)

Cooperative Research with DOE NE-ID (Idaho National Laboratory)

Emergency Operations Center (EOC)

A surprise drill by DOE Headquarters personnel was conducted at the INL EOC on 29th August. The drill was centered on a fire at the RWMC facility that was caused by a forklift that punctured a diesel fuel container. The drill went smoothly as the NOAA team ran the NOAA MDIFF transport and dispersion model and provided model interpretations meteorological forecasts. (Jason Rich, 208-526-9513, and Brad Reese)

INL Climatology

Progress has been made in finishing the Climatology of the Idaho National Laboratory 3rd Edition. Comments have been returned from an internal FRD review and updated in the document. The document should be ready to be sent out for an official NOAA ARL review in September. (Jason Rich, 208-526-9108)

Mesoscale Modeling

In August changes were made to the MM5 modeling system to improve computer security. Currently, the MM5 computer uses a Network File System (NFS) connection to post the model output to the web server. The NFS connection is linked to an older Windows NT server that is running only to support the MM5 output. This setup is not particularly secure. The MM5 scripts have now been reconfigured to use an encrypted OpenSSH connection to post the model output directly to the main FRD web server. This will allow the old NT server to be deactivated. (Richard Eckman, 208-526-2740, and Brad Reese)

Other Activities

Outreach

A research partnership has been established with the University of Wyoming's Department of Atmospheric Science to study the development of convergence zones within the Snake River Plain near INL. Dr. Bart Geerts has a graduate student who formerly worked at the Pocatello NWS office and is interested in developing a Ph.D. dissertation based on the convergence zones. These zones often develop in the winter and sometimes cause considerable snowfall on the eastern side of the Snake River Plain. The research, which is still in the proposal stage, would take advantage of observations from FRD's extensive Mesonet. FRD would play a mainly advisory role in the research. (Richard Eckman, 208-526-2740)

Papers

Eckman, R. M., R. J. Dobosy, D. L. Auble, T. W. Strong, T. L. Crawford, 2006: A pressure-sphere anemometer for measuring turbulence and fluxes in hurricanes. *Journal of Atmospheric and Oceanic Technology*. (Returned for minor revision and re-submitted)

Travel

Shane Beard, August 15 to September 19, 2006, to Houston, TX, to deliver, set-up, and operate the smart balloon and support equipment needed for the Texas Air Quality Study II (TEXAQSI) field experiment.

Randy Johnson, August 23 to September 15, 2006, to Houston, TX to manage the smart balloon deployment for the Texas Air Quality Study II (TEXAQSI) field experiment.

Kirk Clawson, August 23-25, 2006, to New York City, NY, to participate in the Urban Dispersion Project Planning Meeting.

Kirk Clawson, August 28-September 1, 2006, to Silver Spring, MD and Warrenton, VA to participate in the NOAA Leadership Seminar.

Paula Fee, August 27-31, 2006, to Boulder, CO, to attend C-Request training and meet with various Mountain Region support personnel in the Workforce Management Office, Financial Management, and Property Management offices.

Training

On August 28-31, 2006, Kirk Clawson attended the NOAA Leadership Seminar in Arlie Center, Warrenton, VA. See <http://www.wfm.noaa.gov/NLS/>.

On August 28-29, 2006, Paula Fee attended the "C-Request Training for Requisitioners." in Boulder, CO. On October 16, 2006, the Department of Commerce plans to deploy the web requisitioning module, C-Request. This web-based system will interface between the current

requisition system called CSTARs and the Commerce Financial System or CFS. The requisitioner will create the C-request form; route the requisition to the approvers and/or reviewers; receive the approvals, and submit the requisitions electronically to their assigned Acquisition Office. This will be a standardized data system across DOC Bureaus.

On August 31, 2006, Paula Fee attended a 3-hour training called "INL EZ Material Request or EZMR" at the INL Training Center in Idaho Falls. This hands-on training showed users how to access, search and shop from the first Business to Business (B2B) e-Catalog website (Porter's Office City).

Personnel

The Vacancy Announcement for the FRD Administrative Assistant position closed on August 25, 2006. The 65 applications are being reviewed by Boulder Work Force Management personnel.